REMARKS/ARGUMENTS

This is in response to the office action mailed November 6, 2007.

The claims have been amended and it is respectfully submitted that the claims are now in accordance with 35 USC 112, first and second paragraphs. With regard to the rejection of claim 60 and the claims dependent thereon under 35 USC 112, first paragraph, it is respectfully submitted that there is clear teaching in the patent application of the subject matter in such claims, i.e., A process for making aluminum oxynitride comprising: (a) providing a chamber, (b) introducing aluminum oxide particles and carbon particles into the chamber, (c) mixing the aluminum oxide particles and carbon particles while passing nitrogen gas thereover at a temperature sufficient to form the aluminum oxynitride, and (d) removing said aluminum oxynitride from the chamber. Reconsideration is respectfully requested

Claims 53-59 have been amended to point out that the temperature is sufficient to convert the aluminum oxide particles, carbon particles and nitrogen into aluminum oxynitride.

It is respectfully submitted that the subject matter of claims 60 and 76 is clearly described in the patent application.

Claims 32-86 and 88-93 stand rejected under 35 USC 103 over Maquire et al., (U.S. Patent No. 4,686,070) or Applicant's admitted prior art (AAPA).

Maquire et al., (U.S. Patent No. 4,686,070) points out that the preferred process is as follows:

> The ***aluminum oxide/carbon mixture is placed in an alumina crucible*** and is reacted in an atmosphere of flowing nitrogen at temperatures from 1550°C to 1850°C. for up to two hours at the maximum temperature. **The preferred heat treatment is in *two steps*. *In the first step*, a temperature of approximately 1550° C. is used for approximately one hour, whereby, for an appropriate ratio of alumina to carbon, the temperature unstable gamma-aluminum oxide is only partially reacted with carbon and nitrogen to form *both* alpha-aluminum oxide and aluminum nitride. *A one hour soak at 1550°C. is sufficient to convert the proper amount of Al_2O_3 to AlN*. *In the second step***, a temperature of 1750°C. or up to the solidus temperature of aluminum oxynitride (2140°C.), is used for approximately 40 minutes, whereby alpha-aluminum oxide and aluminum nitride combine to form cubic aluminum oxynitride. (emphasis added)

AAPA points out in the last paragraph of the Background section:

> As shown in Equation 1, a portion of alumina, carbon, and nitrogen react ***to form aluminum nitride***, and carbon monoxide gas is produced. This reaction can occur at about 1650-1750 °C. ***The formed aluminum nitride then reacts with alumina, e.g., at about 1750-1850 °C, to form AlON***. Synthesis of AlON by carbothermal nitridation, e.g., by conventional batch processing, can take up to about 20 to 30 hours to complete.

Thus, both Maquire et al., (U.S. Patent No. 4,686,070) and AAPA point out that one first produce aluminum nitride and the react the formed aluminum nitride with alumina to form aluminum oxynitride. TWO STEP PROCESSES. Clearly, both AAPA and Maguire teach one to first produce AlN and **then take *that produced or formed AlN and subsequently process the*** produced or formed AlN with alumina to produce AlON. ***Applicant teaches one to do the entire conversion in a single step. Further, there is no recongition in Serpek, AAPA, or Maquire that one can produce ALON in a single conversion step process.***

The Examiner cites In Re Fulton, 391 F. 3d 1195. In In Re Fulton Fulton, the primary reference discloses a number of configurations and indicates that other alternatives can be used but does not describe the specific configuration used in the applicant's claim. A second reference described the configuration claimed. The Applicant took the position that since the primary reference did not disclose the claimed confirmation it taught against the claimed invention. In our case none of the references describe or suggest or recognized that one produce the produce in one step. Alternatives to the two step process prior art process are not described, suggested, or recognized. Thus, the facts in our case are quite different from those in Fulton. In the facts before us the reference describes only production in two steps without suggesting any alternatives.

With regard to the Examiner's position that he finds no reference in AAPA or Maguire that one should use a two step process, it is respectfully submitted that where the AAPA and Maguire teach that one use a two step process, then AAPA and Maguire are telling the reader that a two step process should be used; but in any event, AAPA and Maguire never teach one to use a one step process. **Clearly, both AAPA and Maguire**

teach one to first produce AlN and then take that produced AlN and subsequently process the produced or formed AlN with alumina to produce ALON. Applicant teaches one to do the entire conversion in a single step.

Further, it is applicant's position that the Examiner is using hindsight to reach the conclusion that the invention set forth in the claims is obvious under 35 USC 103. ***The clear teaching of the prior art is that one would use a drum as Serpek at one temperature to produce AlN and then produce ALON from the produced AlN at a different temperature.*** Both AAPA and Maguire teach one to first produce AlN and **then take** ***that produced or formed AlN and subsequently process the*** produced or formed AlN with alumina to produce ALON. ***Applicant teaches one to do the entire conversion in a single step.***

The Examiner has never explained why one would use a continuous process to produce ALON when the prior art teaches that a two step. As stated by the Supreme Court in KSR vs. Teleflex cited by the Examiner:

A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning. See *Graham,* 383 U. S., at 36 (warning against a temptation to read into the prior art the teachings of the invention in issue and instructing courts to guard against slipping into the use of hindsight (quoting *Monroe Auto Equipment Co.* v. *Heckethorn Mfg. & Supply Co.,* 332 F. 2d 406, 412 (CA6 1964))). (emphasis added)

In view of the two step teaching to produce ALON it appears that the Examiner is using hindsight in reaching his conclusion rather than following the teachings of the prior art, i.e. a teaching of a two step process to produce ALON. ***That is, using the teaching of the prior art one would use a drum as Serpek at one temperature to produce aluminum nitride AlN and having formed the aluminum, remove the formed aluminum nitride to react the formed aluminum nitride with alumina at a different temperature to produce AlON. As noted above,*** both Maguire et al., (U.S. Patent No. 4,686,070) and AAPA point out that one first produce aluminum nitride and the react the formed aluminum nitride with alumina to form aluminum oxynitride. TWO STEP PROCESSES. Certainly it is not the case that processes taught in the prior art to be done in more than one step be done in a single step. Both AAPA and Maguire teach one to first produce AlN and **then**

take ***that produced or formed AlN and subsequently process the produced or formed AlN*** with alumina to produce ALON. ***Applicant teaches one to do the entire conversion in a single step. Further, there is no recongition in Serpek, AAPA, or Maquire that one can produce ALON in a single conversion step process.***

Thus, it is respectfully submitted that the ***Examiner uses hindsight*** in reaching the conclusion that it is obvious in view to provide a process for making aluminum oxynitride comprising: (a) providing a chamber, (b) introducing aluminum oxide particles and carbon particles into the chamber, (c) mixing the aluminum oxide particles and carbon particles while passing nitrogen gas thereover at a temperature sufficient to form the aluminum oxynitride, and (d) removing said aluminum oxynitride from the chamber.

In the event any additional fee is required, please charge such amount to Patent and Trademark Office Deposit Account No. 50-3192.

Respectfully submitted,

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Date

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